

PM₁₀ SIP/Maintenance Plan Evaluation Report:

**Aggregate, Asphalt, and Concrete Production Facilities
Davis, Salt Lake and Utah Counties**

Utah Division of Air Quality

Major New Source Review Section

October 1, 2015

PM₁₀ Maintenance Plan EVALUATION REPORT
Aggregate, Asphalt, and Concrete Production Facilities
Davis, Salt Lake and Utah Counties

This evaluation report (report) provides Technical Support for Section IX, Part H.1 and Section IX, Part H.3 of the Utah Maintenance Plan; to address the Davis, Salt Lake and Utah County PM₁₀ Nonattainment Areas. This document specifically serves as an evaluation of the Aggregate, Asphalt, and Concrete production facilities operating in these past nonattainment areas.

The following General Requirements designated as 'Utah County' and Emission Limitations and Operating Practices – (Dated September 24, 1990 and Updated June 28, 1991; February 27, 1997, and April 24, 2002) and General Requirements designated as 'Davis and Salt Lake County' Emission Limitations and Operating Practices (Dated 28 June 1991) are the current SIP approved requirements for sources including the Aggregate, Asphalt, and Concrete Production facilities operating in these counties.

These general requirements and source specific limitations are being introduced to provide discussion regarding operating requirements and SIP limitations established for the Aggregate, Asphalt, and Concrete Production facilities specifically mentioned in these SIPs.

I. IX.H.1.1 General Requirements (Utah County):

1.a.A Stack testing to show compliance with the emission limitations for the sources in this appendix shall be performed in accordance with 40 CFR 60, Appendix A; 40 CFR 51 Appendix M; and R307-305-3, Utah Air Conservation Rules. The back half condensables are required for inventory purposes. The following test methods shall be used for the indicated air contaminants:

PM₁₀ For stacks in which no liquid drops are present, the following methods shall be used: 40 CFR 51, Appendix M, Methods 201 or 201a plus the back half condensables using Method 202, or other appropriate EPA approved reference method.

For stacks in which liquid drops are present, methods to eliminate the liquid drops should be explored. If no reasonable method to eliminate the drops exists, then the following methods shall be used: 40 CFR 60, Appendix A, Method 5, Sa, 5d, 5e, plus back half condensables using method 202, or other appropriate EPA approved reference method. All particulate captured in the back half shall be considered PM₁₀.

The PM₁₀ captured in the front half shall be considered for compliance purposes

SO₂ Appendix A, Method 6, 6A, 6B or 6C

NO_x Appendix A, Method 7, 7A, 7B, 7C, 7D or 7E

Sample Location Appendix A, Method 1

Vol flow rate Appendix A, Method 2

Calculations: To determine mass emission rates, the pollutant concentration as determined by the appropriate methods above shall be multiplied by the volumetric flow rate and any necessary conversion factors to give the results in the specified units of the emission limitation.

Notification of the test date shall be provided at least 30 days prior to the test. A pretest conference shall be held if directed by the Executive Secretary. The emission point shall be designed to conform to the requirements of 40 CFR 60, Appendix A, Method 1, and Occupational Safety and Health Administration (OSHA) approvable access shall be provided to the test location.

The production rate during all compliance testing shall be no less than 90% of the maximum production achieved in the previous three (3) years.

- 1.a.B Compliance with the annual limitations shall be determined based on a rolling 12 month total. On the first day of each month a new 12-month total shall be calculated using the previous 12 months.
- 1.a.C Records of all information used to show compliance shall be kept for all periods when the plant is in operation. These records shall be made available to the Executive Secretary upon request, and shall include a period of two years ending with the date of the request.
- 1.a.D All installations and facilities authorized by this regulation shall be adequately and properly maintained.
- 1.a.E The definitions contained in R307-101-2, Definitions, apply to Section IX, Part H.
- 1.a.F Visible emissions shall be as follows except as otherwise designated in specific source subsections: Baghouse applications shall not exceed 10% opacity; scrubber and ESP applications shall not exceed 15% opacity; combustion sources without control facilities shall not exceed 10% opacity; and fugitive emissions shall not exceed 15% opacity; fugitive dust and all other sources shall not exceed 20% opacity.
- 1.a.G Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9. For intermittent sources and mobile sources opacity observations shall be conducted using procedures similar to Method 9, but the requirement for observations to be made at 15 second intervals over a six minute period shall not apply and any time interval with no visible emissions shall not be included.
- 1.a.H All unpaved operational areas which are used by mobile equipment shall be water sprayed and/or chemically treated to reduce fugitive dust. Control is required at all times (24 hours per day every day) for the duration of the project/operation. The application rate of water shall be a minimum of 0.25 gallons per square yard. Application shall be made at least once every two hours during all times the installation is in use unless daily rainfall exceeds 0.10 of an inch or the road is in a muddy condition or if it is covered with snow or if the ambient temperature falls below freezing or if the surfaces are in a moist/damp condition. If chemical treatment is to be used, the plan must be approved by the Executive Secretary. Records of water treatment shall be kept for all periods when the plant is in operation. The records shall include the following items:
 - A. Date
 - B. Number of treatments made, dilution ratio, and quantity
 - C. Rainfall received, if any, and approximate amount
 - D. Time of day treatments were made

Records of treatment shall be made available to the Executive Secretary upon request and shall include a period of two years ending with the date of the request.

II. Emission Limitations and Operating Practices Dated 28 June 1991

2.1 General Requirements (Davis and Salt Lake Counties)

2.1.A Stack testing to show compliance with the emission limitations for the sources in this appendix shall be performed in accordance with 40 CFR 60, Appendix A; 40 CFR 51 Appendix M; and Section 3.2.5, UACR. The back half condensables are required for inventory purposes and shall be determined using the method specified by the Executive Secretary. If after two stack tests are conducted at a particular emissions point under this SIP, it is shown that because of the reliability of pollution control equipment, constant emissions or other appropriate reasons, the stack testing and frequency prescribed by these regulations is more frequent than necessary to determine the quantity of emissions, the Utah Air Conservation Committee may reduce the stack testing frequency of any particular emission point in a given year. The following test methods shall be used for the indicated air contaminants:

PM₁₀ For stacks in which no liquid drops are present, the following methods shall be used: 40 CFR 51, Appendix M, Methods 201 or 201a plus the back half condensables using Method 202 (when promulgated by the EPA) or by the method specified by the Executive Secretary.

For stacks in which liquid drops are present, methods to eliminate the liquid drops should be explored. If no reasonable method to eliminate the drops exists, then the following methods shall be used: 40 CFR 60, Appendix A, Method 5, 5a, 5d, 5e, plus back half condensables using method 202 (when promulgated by the EPA) or by the method specified by the Executive Secretary. All particulate captured in the back half shall be considered PM₁₀.

The PM₁₀ captured in the front half as determined by the appropriate method acceptable to the Executive Secretary, shall be considered for compliance purposes.

SO₂ Appendix A, Method 6, 6A, 6B, or 6C

NO_x Appendix A, Method 7, 7A, 7B, 7C, 7D or 7E

Sample Location Appendix A, Method 1

Vol flow rate Appendix A, Method 2

Calculations To determine mass emission rates (lbs/hr, etc.), the pollutant concentration as determined by the appropriate methods above shall be multiplied by the volumetric flow rate and any necessary conversion factors determined by the Executive Secretary to give the results in the specific units of the emission limitation.

Notification of the test date shall be provided at least 45 days prior to the test. A pretest conference shall be held if directed by the Executive Secretary. It shall be held at least 30 days prior to the test between the owner/operator, the tester, and the Executive Secretary. The emission point shall be designed to conform to the requirements of 40 CFR 60, Appendix A, Method 1 and Occupational Safety and Health Administration (OSHA) approvable access shall be provided to the test location. The production rate during all compliance testing shall be no less than 90% of the production rate at which the facility will normally be operated.

The limitations for the sources listed in Section 2.2 are expressed in terms of PM₁₀, SO₂ and NO_x. The PM₁₀ limitations have been converted to PM₁₀ from TSP based upon estimated, but unsubstantiated emissions factors. The emissions data used in this Section are based upon the best data available. Nevertheless, the SO₂ and NO_x emissions limitations are also estimated, but are unsubstantiated

calculations, conversion factors and emissions factors. SO₂ and NO_x historically have not been measured in specific stacks resulting in a sparsity of reliable data (i.e., the SO₂ and NO_x emissions inventory and resulting emissions limitations may be too high or low). After this PM₁₀ SIP becomes effective and at the first regularly scheduled compliance test in accordance with Sections 3.2.5 or 3.2.6, UACR, the emissions limitations as stated herein will be verified as necessary, and readjusted with the approval of the Executive Secretary. The emissions limitations for PM₁₀, SO₂ and NO_x will be adjusted appropriately once the relationship between the old emissions inventory calculations, stack tests and emissions factors and the new test results are understood and verified. Adjustments may be made, provided the adjustments do not adversely affect achieving compliance with the National Ambient Air Quality Standards (NAAQS).

An exceedance of the mass emissions rates (lbs/hr.), concentration limitations (grains/dscf), or both for a single point source during compliance testing shall be considered a single violation during the test period. If an adjustment in the relationship between the TSP base limitation and PM₁₀ limitations should be necessary at the first compliance test, individual stack test results will not be considered in violation of the PM₁₀ particulate emission limitations if the TSP base value is not exceeded. The base TSP value is the TSP value from which the PM₁₀ particulate limitation was calculated as per the SIP Technical Support Document or as indicated in this Section.

Following the final establishment of the PM₁₀ particulate, SO₂, and NO_x limitations, the new limitations will be used for enforcement where applicable.

- 2.1.B Visible emissions shall be as follows except as otherwise designated in specific source subsections: Baghouse applications shall not exceed 10% opacity; scrubber and SEP applications shall not exceed 15% opacity; combustion sources without control facilities shall not exceed 10% opacity; fugitive emissions shall not exceed 15% opacity and fugitive dust, refinery catalytic cracking units, and process flares shall not exceed 20% opacity.
- 2.1.C Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9. For intermittent sources and mobile source emissions opacity observations shall be conducted using a modified method 9 (not all 24 readings for a six minute period required).
- 2.1.D Compliance with the annual limitations shall be determined on a rolling 12 month total except where specifically exempted or otherwise provided for. Based on the first day of each month a new 12-month total shall be calculated using the previous 12 months.
- 2.1.E Records of consumption/production shall be kept for all periods when the plant is in operation. Records of consumption/production shall be made available to the Executive Secretary upon request, and shall include a period of two years ending with the date of the request.
- 2.1.F These limitations and operating practices shall replace all language pertaining to particulate, SO₂ and NO_x in approval orders for the listed sources issued prior to the effective date of this Appendix A. All language in the existing approval orders which pertains to other air contaminants shall remain in effect with the approval orders.
- 2.1.G All installations and facilities authorized by this regulation shall be adequately and properly maintained.
- 2.1.H Any future modifications to the installation or facilities covered in this regulation must also be approved in accordance with Section 3.1, UACR.
- 2.1.I All unpaved operational areas which are used by mobile equipment shall be water sprayed and/or chemically treated to reduce fugitive dust. Control is required at all times (24 hours per day every day) for the duration of the project/operation. The application rate of water shall be a minimum of 0.25 gallons per square yard. Application shall be made at least once every two hours during all times the installation is in use unless daily rainfall exceeds 0.10 of an inch or the road is in a muddy condition or if it is covered with snow or if the ambient temperature falls below freezing or if the surfaces are in a moist/damp condition. If chemical treatment is to be used, the plan must

be approved by the Executive Secretary. Records of water treatment shall be kept for all periods when the installation is in operation. The records shall include the following items:

- A. Date
- B. Number of treatments made, dilution ratio, and quantity
- C. Rainfall received, if any, and approximate amount
- D. Time of day treatments were made

Records of treatment shall be made available to the Executive Secretary upon request and shall include a period of two years ending with the date of the request.

- 2.1.J Annual emissions referred at the end of each subsection of Appendix A are not to be used for purposes of determining compliance unless otherwise specified in source specific sections. No modifications to these sources, which would result in an increase of annual emissions, shall be approved without an analysis of the effect on the PM₁₀ SIP. These annual emissions shall be used in the determinations required for off-set credit, PSD applicability, and nonattainment area major source reviews. These emissions are normally what the source is actually emitting annually.
- 2.1.K “Test if directed,” as used in specific source subsection, shall mean test if directed by the Executive Secretary.
- 2.1.L The definitions contained in Section 1-1, UACR (Foreword and Definitions), shall apply to this Appendix A.
- 2.1.M Petroleum Refineries – N/A for this section.

III. SIP Approved Source Specific Requirements

The following conditions have been taken from the Aggregate, Asphalt, and Concrete sources specifically listed and operating under the requirements of the Utah County PM₁₀ SIP (Dated September 24, 1990 and Updated June 28, 1991; February 27, 1997, and April 24, 2002) and Davis and Salt Lake County PM₁₀ SIP dated June 28, 1991. These specific conditions are representative of all Aggregate, Asphalt, and Concrete sources listed in these SIPs and therefore are only listed once as to avoid a repetitive discussion.

Production Limitations:

All sources list a production requirement with a tons per hour (tph), tons per year (tpy), hours per day, and hours per year limitation. These limitations are tracked through scale house records, vendor receipts, or other approved appropriate tracking methods. These records are kept on-site and track daily production and hours of operation of the sources. All records are kept in an operations log.

Fugitive Dust Requirements:

- A. All unpaved roads and other unpaved operational areas which are used by mobile equipment shall be water sprayed and/or chemically treated to reduce fugitive dust. Control is required during the duration of the project/operation. The application rate of water shall be a minimum of 0.25 gallons per square yard. Application shall be made at least once every two hours during all times the installation is in use unless daily rainfall exceeds 0.10 of an inch, the road is in a muddy condition, or the road is covered with snow, or if the ambient temperature falls below freezing. If chemical treatment is to be used, the plan must be approved by the Executive Secretary. Records of water treatment shall be kept for all periods when the plant is in operation. The records shall include the following items:
 - 1. Date
 - 2. Number of treatments made, dilution ratio, and quantity
 - 3. Rainfall received, if any, and approximate amount
 - 4. Time of day treatments were made

Records of treatment shall be made available to the Executive Secretary upon request and shall include a period of two years ending with the date of the request.

- B. Haul road length shall not exceed (specific to pit location) feet, and the loader operations road shall not exceed (specific to pit location) feet without prior approval in accordance with Section 3.1, UACR. The speed of vehicles on the haul road shall not exceed (specific to pit location) miles per hour (mph), and the speed of vehicles on the loader operations road shall not exceed (specific to pit location) mph without prior approval in accordance with Section 3.1, UACR.
- C. The storage piles shall be watered to minimize generation of fugitive dusts as dry conditions warrant or as determined necessary by the Executive Secretary. The total acreage of the storage piles shall not exceed (specific to pit location) acres.
- D. Water sprays or chemical dust suppression sprays shall be installed at the following points to control fugitive emissions:
 - 1. All crushers
 - 2. All screens (not just in the wash plant)
 - 3. All conveyor transfer points
 - 4. The sprays shall operate to the extent necessary to keep the equipment operation within the opacity limitations established.
 - 5. The moisture content of the aggregate shall be maintained at a value of no less than 4.0 percent by weight. The silt content (minus 200 mesh as determined by ASTM-C-136) of the product shall not exceed 5.0 percent by weight on a daily average without prior approval in accordance with Section 3.1, UACR. The moisture and silt content shall be tested if directed by the Executive Secretary using the appropriate ASTM method.

The sprays shall operate to the extent necessary to keep the equipment operating within the opacity limitation.

- E. The open disturbed area shall not exceed (specific to pit location) acres without prior approval from the Executive Secretary.
- F. Water shall be added to the mined material to be blasted and/or bulldozed such that before the material is moved, its moisture content, as determined by ASTM Method D-2215, is greater than 4.0% by weight. This moisture content shall be maintained throughout subsequent crushing, screening and conveying circuits. The moisture content shall be tested once each day using the appropriate ASTM method.

Records of the moisture content shall be made available to the Executive Secretary upon request, and shall include a period of two years ending with the date of the request. If opacity observations of the sources regulated by this moisture content condition indicate visible emissions in excess of 10% opacity, more moisture shall be added until 10% opacity can be achieved. An exceedance of 10% opacity shall not be considered a violation of an opacity standard, but failure to add additional moisture in that case shall be a violation of this condition.

Asphalt Processing Requirements (in addition to those requirements above):

- A. Emissions to the atmosphere from the indicated emission points shall not exceed the following rates and concentrations:

Asphalt plant baghouse

PM ₁₀	(specific to individual plant) lbs/hr	0.024 grains/dscf (SIP required)
PM ₁₀ RAP	(specific to individual plant) lbs/hr	0.028 grains/dscf (SIP required)

Asphalt plant scrubber

PM ₁₀	(specific to individual plant) lbs/hr	0.024 grains/dscf (SIP required)
PM ₁₀ RAP	(specific to individual plant) lbs/hr	0.028 grains/dscf (SIP required)

- B. Stack testing to show compliance with the above emission limitations shall be performed for the plant exhaust stack emission point and air contaminants, as determined by the following test methods in accordance with 40 CFR 60, Appendix A, 40 CFR 51, Appendix M (see paragraph 2.1.A. above for more details), and as directed by the Executive Secretary:

	Method	Retest Every
Asphalt Plant Exhaust Stack	PM ₁₀ 201/201a	3 years

- C. Devices indicating the following operational parameters shall be installed, operable and accessible for safe inspection:

1. Differential pressure across the fabric filter dust collector in inches of water gage (in H₂O).
2. Temperature of the gases exiting the fabric filter baghouse in degrees Fahrenheit (°F)
3. Differential pressure across the scrubber in inches of water gage (in H₂O)
4. Scrubber liquid flow rate in gallons per minute (gpm)
3. Asphalt product production in tons per hour
4. Asphalt product temperature in degrees Fahrenheit (°F)
5. Asphalt oil temperature in degrees Fahrenheit (°F)

They shall be monitored with equipment located such that an inspector can at any time safely read the output. All instruments shall be calibrated against a primary standard at least once every 90 days. The primary standard shall be specified by the Executive Secretary.

- D. The moisture content of the raw aggregate shall be maintained at a value of no less than 4.0% by weight. The silt content of the product shall not exceed 6.0% by weight without prior approval in accordance with Section 3.1, UACR. The moisture and silt content shall be tested if directed by the Executive Secretary using the appropriate ASTM method.
- E. Under no circumstances shall the percent by weight of recycle asphalt exceed 50%.

Concrete Processing Requirements (in addition to those requirements above):

- A. The silos shall be pneumatically loaded with cement or flyash. The displaced air from the silos generated during filling shall be passed through a baghouse. The baghouse flowrate shall be measured at the request of the Executive Secretary. The method shall be 40 CFR 60, Appendix A Method 2.
- B. The moisture content of the material shall be maintained at a value of no less than 4.0% by weight. The silt content for the following products shall not exceed the following values without prior approval in accordance with Section 3.1, UACR:

- | | | |
|----|--------------------|---------------|
| 1. | Base | 9% by weight |
| 2. | Sand | 5% by weight |
| 3. | Concrete aggregate | 7% by weight |
| 4. | 1 1/2" rock | 7% by weight |
| 5. | Class A chips | 12% by weight |

The silt content shall be determined on a daily average. The moisture and silt content shall be tested if directed by the Executive Secretary using the appropriate ASTM method.

- C. The mix truck haul road shall be paved and shall be cleaned by a street vacuum equipped with a baghouse or by water flooding as necessary to minimize fugitive dust.
- D. The batcher unit on the concrete plant shall be enclosed in a building as proposed in the NOI and the loading process from the discharge hopper into the mixer trucks shall be controlled by an adjustable boot.

IV. SIP Limitations for Aggregate, Asphalt and Concrete Production Equipment/Dust Control

Since the enacting of the Utah County SIP - Emission Limitations and Operating Practices (Dated September 24, 1990 and Updated June 28, 1991; February 27, 1997, and April 24, 2002) and Davis and Salt Lake County SIP (Dated June 28, 1991); the UDAQ has enhanced its program operations to include State Regulations which address Aggregate, Asphalt, and Concrete processing facilities and their operations specifically. State Regulation R307-312 - Aggregate Processing Operations for PM_{2.5} Nonattainment Areas addresses operating requirements for these industries and their associated equipment. It reads as follows:

Rule R307-312. Aggregate Processing Operations for PM_{2.5} Nonattainment Areas. As in effect on May 1, 2015

R307-312-1. Purpose.

R307-312 establishes emission standards for sources in the aggregate processing industry, including aggregate processing equipment, hot mix asphalt plants, and concrete batch plants.

R307-312-2. Applicability.

(1) R307-312 applies to all crushers, screens, conveyors, hot mix asphalt plants, and concrete batch plants located within a PM_{2.5} nonattainment and maintenance area as defined in 40 CFR 81.345 (July 1, 2011) and geographically described as all regions of Salt Lake and Davis counties; all portions of the Cache Valley; all regions in Weber and Utah counties west of the Wasatch mountain range; in Box Elder County, from the Wasatch mountain range west to the Promontory mountain range and south of Portage; and in Tooele County, from the northernmost part of the Oquirrh mountain range to the northern most part of the Stansbury mountain range and north of Route 199.

(2) The provisions of R307-312 do not apply to temporary hot mix asphalt plants.

R307-312-3. Definitions.

The following definitions apply to R307-312:

"Aggregate" means material of which the majority is nonmetallic minerals.

"Concrete batch plant" means any facility used to manufacture concrete by mixing aggregate with cement.

"Conveyor" means a device for transporting nonmetallic materials from one piece of equipment to another.

"Crusher" means a machine used to crush any nonmetallic minerals.

"Hot mix asphalt plant" means any facility used to manufacture hot mix asphalt by heating and drying aggregate and mixing with asphalt cements.

"Nonmetallic mineral" has the same definition as defined in 40 CFR 60.671.

"Screen" means a device for separating nonmetallic minerals according to size by passing undersize material through one or more mesh surfaces in series, and retaining oversize material on the mesh surfaces.

"Temporary" means not more than 180 operating days and not more than 365 calendar days.

R307-312-4. Visible Emissions.

(1) Visible emissions from sources subject to R307-312 shall not exceed the opacity limits as specified in Table 1.

TABLE 1

CATEGORY	OPACITY LIMIT
Crushers	12%
Screens	7%
Conveyor transfer points	7%
Concrete batch plants	7%

(2) Opacity Observation.

(a) Opacity observations of emissions shall be conducted according to 40 CFR 60, Appendix A, Method 9.

(b) The duration of the Method 9 observations shall be 30 minutes (five six-minute averages).

(c) Compliance shall be based on the average of the five six-minute averages. The duration of Method 9 may be reduced to 6 minutes (one six-minute average) if the first six-minute average is below the limit specified in Table 1.

R307-312-5. Hot Mix Asphalt Plants.

(1) The filterable PM_{2.5} emission rate from a hot mix asphalt plant dryer shall not exceed 0.024 grains per dscf.

(a) Filterable PM_{2.5} emissions shall be determined by 40 CFR 51, Appendix M, Method 201A.

(2) From November 1 to March 1, a hot mix asphalt plant burning a fuel other than natural gas or liquefied petroleum gas (LPG) shall not produce more than 50% of its rated capacity.

(a) Production shall be determined by scale house records or equivalent method on a daily basis.

(b) Compliance shall be based on either the daily amount of hot mix asphalt produced averaged over the operating day or the daily amount of hot mix asphalt produced while burning a fuel other than natural gas or LPG averaged over the time the plant is operating while burning a fuel other than natural gas or LPG each day.

(c) Compliance shall be determined by production records and fuel records.

R307-312-6. Compliance Schedule.

(1) All sources subject to R307-312-4 or R307-312-5(2) shall be in compliance with this rule by June 7, 2013.

(2) All sources subject to R307-312-5(1) that begin construction prior to June 7, 2013, shall submit test results demonstrating compliance with R307-312-5(1) to the director by December 14, 2015.

(3) All sources subject to R307-312-5(1) that begin construction on or after June 7, 2013, shall submit test results demonstrating compliance with R307-312-5(1) to the director no later than 180 days after initial startup.

The State of Utah has experienced a wide variation of construction activities associated with the aggregate, asphalt and concrete production industries. These types of facilities are continuously closing and re-opening in more strategic business locations around the counties associated with the PM₁₀ SIPs. Therefore, in order to continually monitor and ensure that these facilities are operating properly, meeting National Ambient Air Quality Standards, and complying with SIP approved and Approval Order requirements, UDAQ has taken the approach of implementing State regulations to cover the industry wide operations rather than target a few specific aggregate, asphalt, or concrete operations or operators. Implementing SIP limitations upon a few source operators would be counterproductive, in UDAQ's view, in reducing PM₁₀ emissions associated with these industries. Greater reductions in PM₁₀ emissions can be gained through general requirements being implemented across all sources in these categories. By doing this all aggregate, asphalt, and concrete processing operations abide by the same regulatory requirements.

R307-312 is essential in the State's continued demonstration of meeting the PM₁₀ standard for the designated PM₁₀ SIP Maintenance areas. R307-312 designates the areas (Counties), defines the source type, establishes visible emission standards for crushers, screens, conveyors, concrete batch plants, observation methods to determine compliance with these visible emission standards, asphalt plant emission standards, asphalt plant fuel burning requirements, and production and fuel records requirements.

Visible emissions standard limitations found in R307-312-4 are presented in Table 2 below. The opacity limitations designated by this regulation requires lower opacity limitations than those of the previous Utah, Davis and Salt Lake County SIPs.

Table 2 – Comparison of Visible Emission Opacity Limitations

Equipment Type	Utah, Davis and Salt Lake County current SIP Limitations	Limitations of State Rule R307-312
Crushers	15% opacity	12% opacity
Screens	10% opacity	7% opacity
Conveyor Transfer Points	10% opacity	7% opacity
Concrete Batch Plants	10% opacity	7% opacity

By lowering the opacity limitations, aggregate, asphalt and concrete production pits have increased fugitive emission control practices through installing advanced/updated control equipment (baghouses, binvents, enclosures, etc.) and implemented advanced dust control strategies through adding more water, sprinkling systems, water sprays, utilizing

water trucks, vacuum sweepers, etc. These improved industry practices have been required for all Approval Order documents for new and modified sources throughout the State SIP area locations.

Additionally, UDAQ requires development and submittal of a Fugitive Dust Control Plan (FDCP) for all aggregate, asphalt and concrete production facilities operating in Nonattainment and Maintenance Areas for PM₁₀ and PM_{2.5}. The FDCP is addressed in Rule R307-309 which reads as follows:

V. Rule R307-1.4.5 Fugitive Emissions and Fugitive Dust.

R307-1.4.5. Purpose.

This rule establishes minimum work practices and emission standards for sources of fugitive emissions and fugitive dust.

The following areas of concern are addressed through this regulation:

- 1) Fugitive Emissions
 - a) Areas of Non-Attainment;
 - b) Fugitive Emission for sources constructed before and after April 25, 1971.
- 2) Fugitive Dust
 - a) Storage and Handling of Aggregate Materials
 - b) Construction/Demolition Activities
- 3) Road Ways
- 4) Mining Activities
- 5) Tailings Piles and Ponds

VI. Additional Approval Order Requirements

UDAQ requires additional limitations for operating in Non-Attainment and Maintenance areas. These limitations are as follows:

- 1) Fugitive emissions from any source shall not exceed 15% opacity.
- 2) Opacity caused by fugitive dust shall not exceed:
 - a) 10% at the property boundary; and
 - b) 20% on site.

Compliance shall be determined by the following:

- 3) Opacity observations of fugitive emissions from stationary sources shall be conducted in accordance with EPA Method 9.
- 4) For intermittent sources and mobile sources, opacity observations shall be conducted using Method 9; however, the requirement for observations to be made at 15 second intervals over a six-minute period shall not apply.
- 5) Opacity observations of fugitive dust from any source shall be measured at the densest point of the plume.
 - (a) For mobile sources, visible emissions shall be measured at a point not less than 1/2 vehicle length behind the vehicle and not less than 1/2 the height of the vehicle.
 - (b) Opacity observations of emissions from stationary sources shall be measured in accordance with EPA Method 9.
 - (c) For intermittent sources, opacity observations shall be conducted using Method 9; however, the requirement for observations to be made at 15 second intervals over a six-minute period shall not apply.

VII. The FDCP further prevents aggregate, asphalt and concrete batching plants from backsliding or relaxing the original SIP listed limitations of the General Requirements or the list of source specific conditions mentioned above in Utah, Davis and Salt Lake County PM₁₀ SIPs .

The FDCP requirements of R307-309-5 General Requirements for Fugitive Dust specifically limit opacity at the property boundary to 10% and 20% on-site. The effort to reduce fugitive dust emission opacity to 10% at the property boundary requires the same control techniques described above in Section VI to meeting the opacity limitations found in Table 1 of R307-312.

VI. SIP Listed Facilities

The SIP listed Aggregate, Asphalt and Concrete Production facilities and emissions are represented in Table 3 (Utah County) and Table 4 (Davis and Salt Lake Counties) below. The current source status (operating/closed) along with their current SIP/AO emission limitations are represented in this table also.

**Table 3: Utah County Emission Reductions/Increases
Aggregate, Asphalt and Concrete Processing plants**

SIP Source	Post SIP Allowables			Actuals/Current AO Allowables		
	PM10	NOx	SO2	PM10	NOx	SO2
Geneva Rock Products - Orem Plant	45	34	11	12.55	8.93	2.12
Westroc - Highland	13	7.6	0.7	9.38	7.07	0.7
Westroc - Pleasant Grove (Kilgore)	7.2	14	0.5	10.3	31.1	3.3
Consolidated Red E Mix	12.6	24.5	2.6	0	0	0
Total	77.8	80.1	14.8	32.23	47.1	6.12
Reduction in SIP Listed Source Emissions	-45.57	-33	-8.68			

**Table 4: Davis and Salt Lake County Emission Reductions/Increases
Aggregate, Asphalt and Concrete Processing plants**

	Post SIP Allowables			Actuals/Current AO Allowables		
SIP Source	PM10	NOx	SO2	PM10	NOx	SO2
Asphalt Materials (asphalt)	2.7	2.9	0.1	5.46	4.12	0.48
Asphalt Materials (crusher)	10.2	0.0	0.0	10.2	0	0
Concrete Products - Hobusch (Closed)	33.4	8.3	0.9	0	0	0
Concrete Products - # 3 Pit (Closed)	15.5	2.0	0.2	0	0	0
Concrete Products - Walker	34.7	17.4	1.3	21.28	41.61	4.1
Concrete Products - Whitehill (Closed)	48.0	9.8	0.9	0	0	0
Geneva Rock - 39th South	4.5	5.3	0.5	6.5	8.3	0.8
W.W. & W.B. Gardner (Closed)	24.1	13.0	6.2	0	0	0
Harper - Pit # 1	7.8	18.4	1.9	4.28	4.12	0.03
Harper - Pit # 10	16.3	17.9	1.6	26.72	32.40	5.36
Monroc - Beck St. (Closed)	69.5	17.2	8.0	0	0	0
Monroc - Kearns (Closed)	21.4	7.6	0.6	0	0	0
Parsons - Kearns (Closed)	4.9	4.6	0.4	0	0	0
Parsons - Woodscross	6.9	4.6	0.4	6.9	4.6	0.4
Pioneer Sand & Gravel	21.8	9.1	0.9	0	0	0
Salt Lake City Asphalt	5.3	5.7	0.1	5.3	5.7	0.1
Salt Lake County Asphalt	29.3	12.8	0.6	29.3	12.8	0.6
Salt Lake Valley Sand & Gravel	43.9	21.4	13.9	43.9	21.4	13.9
Savage Rock	28.5	14.1	1.2	0	0	0
Staker - Beck St.	54.5	58.6	34.6	17.09	13.50	1.44
Staker - Draper (Point East)	13.4	16.5	1.1	44.75	48.38	25.62
Staker - West Pit	13.3	16.5	1.1	13.3	16.5	1.1
Union Pacific Resources	28.1	15.3	1.5	0	0	0
Wolf Excavating	3.3	3.4	0.3	0	0	0
Geneva Rock - Point of the Mountain	81.0	9.6	21.4	145.44	8.56	41.00
Geneva Rock - Hansen Lehi Emission Offset Credits Used* AO AN0105650014-08				-84.43	-72.53	
Geneva Rock - Mount Jordan Emission Offset Credits Used** AO AN0127760005-09				-5	-21.13	-21.14
Totals	622.3	312.0	99.7	290.99	128.33	73.79
Reduction in SIP Listed Source Emissions	-331.31	-183.67	-25.91			

VII. Conclusion:

Through implementation of R307-312 and current AO conditions and requirements, SIP listed fugitive dust emissions of PM_{10} and $PM_{2.5}$ and PM_{10} precursors of NO_x and SO_2 have been effectively reduced in the Utah, Davis and Salt Lake County designated SIP areas. This reduction of emissions is also demonstrated in the SIP Source Table 3(Utah County) and Table 4 (Davis and Salt Lake County). In addition to the requirements of the above stated regulations; the lowering of opacity limitations and installation of updated control equipment (baghouses, binvents, enclosures, water spray/sprinkling systems) aggregate, asphalt and concrete production plants no longer require specific SIP listed requirements to operate within the designated SIP areas in the State. All source specific requirements listed in the aggregate, asphalt, and concrete facilities addressed in the Utah County SIP (Dated September 24, 1990 and Updated June 28, 1991; February 27, 1997, and April 24, 2002) and in the Davis and Salt Lake County Emission Limitations and Operating Practices (Dated 28 June 1991) listed in Section III of this document are all covered by the existing rules (R307-312, R307-1.4.5) and the individual source issued Approval Order. Relaxation of the SIP source requirements has not been allowed and all SIP source Approval Orders are more stringent than their SIP listed requirements.

Therefore, the current air monitoring and maintenance modeling demonstration shows that there is no longer a continued need to specifically list a few individual operators from these industries in the Utah, Davis, and Salt Lake County SIPs. The state rules are proving to be effective in maintaining the PM_{10} National Ambient Air Quality Standard.